

REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the following remarks.

A minor amendment to claim 38 is made herein to correct an antecedent basis issue. This amendment is considered to be non-narrowing, and no estoppel should be deemed to attach thereto.

Summary of Rejections

Claims 38-63 and 75 stand rejected under 35 USC, first paragraph, based on the written description requirement.

Claims 38-41, 44, 45, 48-54 and 59-63 stand rejected under 35 USC §103(a), as being unpatentable over Ranta-Aho et al. (US 2005/0048975) in view of Tiedmann et al. (US 2005/0047771) and Applicants' Description of the Related Art. Dependent claims 42, 43 and 58 stand rejected under 35 USC §103(a), as being unpatentable over Ranta-Aho et al. (US 2005/0048975) in view of Tiedmann et al. (US 2005/0047771) and Applicants' Description of the Related Art, further in view of Legg et al. (US 6 414 947). Dependent claim 75 stands rejected stand rejected under 35 USC §103(a), as being unpatentable over Ranta-Aho et al. (US 2005/0048975) in view of Tiedmann et al. (US 2005/0047771) and Applicants' Description of the Related Art, further in view of Love et al. (US 2004/0219920). The Applicants respectfully traverse these rejections as follows.

At the outset, the Applicants note:

(1) The Office previously asserted in the Office Action of July 27, 2009 an obviousness rejection based on a combination of Ranta-Aho et al., Tiedemann et al. and Heo et al, (US 2004/0160925 A1).

(2) The Office previously withdrew this rejection in the Office Action of December 1, 2009, in favor of an obviousness objection based on Love et al. (US 2004/0219920 A1) and Legg et al. (US 6,414,947).

(3) The claims pending at the time of the issuance of the Office Action of July 27, 2009 correspond in essence with the presently pending claims.

(4) The Office has failed to explain why it is again relying on Ranta-Aho et al. and Tiedemann et al., when a rejection based on these references was previously acknowledged to be unwarranted and was abandoned.

(5) In fact, the only differences between the Office Action of July 27, 2009 and the current Office Action are minor and appear to be (1) paragraphs [0031] and [0042] of Tiedemann are cited in the present Office Action, (2) the Office Action of July 27, 2009 at page 4, lines 4 et seq. acknowledged differences between the claimed invention and the combination of Ranta-Aho et al. and Tiedemann et al., which differ from those acknowledged in the present Office Action of October 13, 2010 at page 5, lines 13 et seq., and (3) the Applicants Description of the Related Art is cited in place of Heo et al. for a disclosure of determining and transmitting information relating to individual HARQ processes.

(6) Newly cited paragraphs [0031] and [0042] of Tiedemann are not at all relevant, for reasons noted below.

In view of the above, it is submitted that the present office action is improper as constituting circular examination. An explanation is requested for the above sequence of Office Actions.

Rejection under 35 USC 112, first paragraph

The Office Action asserts a 35 USC 112, first paragraph, rejection against claims 38-63 and 75 based on lack of written description of subject matter of claim 38. The Office Action alleges that there is no express description of uplink resources for a mobile terminal relating to individual HARQ processes.

However, as noted in the Office Action, the application refers to uplink resources for HARQ processes in paragraphs [0056] and [0057] relating to a description of HARQ schemes as a feature of the E-DCH channel, thus setting the technological environment of the present invention. Also, paragraph [0051] states:

There are M different data flows (MAC-d) carrying data packets to be transmitted from user equipment to Node B. These data flows can have different QoS (Quality of Service), e.g. delay and error requirements, and may require different configurations of HARQ instances. Therefore the data packets can be stored in different Priority Queues. The set of HARQ transmitting and receiving entities, located in user equipment and Node B respectively will be referred to as HARQ process. The scheduler will consider QoS parameters in allocating HARQ processes to different priority queues. MAC-e entity receives scheduling information from Node B (network side) via Layer 1 signaling.

Given the technological environment of this invention set by, for example, paragraphs [0050]-[0058], in particular, paragraphs [0051], [0056] and [0057], which disclose that HARQ having different HARQ processes is a feature of the E-DCH channel (see paragraphs [0050] to [0058])(it is noted that the Office Action acknowledges that the background section discloses

this subject matter (determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal) by relying on this teaching in the Applicants Description of the Related Art in the asserted prior art rejections), those skilled in the art would appreciate that this feature also applies to the E-DCH channel described in the detailed description of the invention in paragraphs [0154] *et seq.*, see in particular paragraph [0157], of the US publication of the present application, US 2007/10281695 A1. In turn, this means that those skilled in the art would appreciate that the use of individual HARQ processes is implicit to the embodiments of the invention, as this feature is inherent to the E-DCH channel (cf. paragraphs [0050] to [0058]). Further, given the use of individual HARQ processes for transmitting data on the E-DCH, one skilled in the art would appreciate that the scheduling information determines the "allocated maximum amount of uplink resources" per user equipment per TTI, and since one HARQ process is used per TTI, this allocated maximum amount of uplink resources is allocated to individual HARQ processes.

Thus, in keeping with the above points showing implicit disclosure and support in the original application, the Detailed Description of the Invention has been amended to expressly refer to allocated maximum amount of uplink resources for the mobile terminal applicable to individual HARQ processes.

Thus, it is submitted that the written description requirement of 35 USC 112, first paragraph, is satisfied, and withdrawal of this rejection is respectfully requested.

Prior Art Rejections

Claim 38 defines:

A method for communicating information relating to the scheduling of uplink data transmissions, wherein a mobile terminal uses a plurality of Hybrid Automatic Repeat reQuest (HARQ) processes to transmit uplink data via an Enhanced Uplink Dedicated Channel of a Universal Mobile Telecommunication System (UMTS) to a plurality of base stations during soft handover of the mobile terminal in a mobile communication system, and wherein at least one scheduling base station of said plurality of base stations schedules uplink data transmissions of the mobile terminal in soft handover, the method comprising:

determining, at the at least one scheduling base station of said plurality of base stations, scheduling information for the mobile terminal indicative of allocated maximum amount of uplink resources for the mobile terminal applicable to individual HARQ processes to be used by the mobile terminal for uplink data transmission,

transmitting, from the at least one scheduling base station, information to at least one other base station of said plurality of base stations to inform the at least one other base station on the applicability of the allocated maximum amount of uplink resources for uplink data transmissions on the individual HARQ processes, and

scheduling, by the at least one other base station, at least one other mobile terminal in communication with a respective base station based on the information received from the at least one scheduling base station.

Thus, the invention of claim 38 provides that the scheduling base station determines scheduling information for the mobile terminal indicative of allocated maximum amount of uplink resources for the mobile terminal applicable to individual HARQ processes to be used by the mobile terminal for uplink data transmission, and transmits information to at least one other base station of the plurality of base stations to inform the at least one other base station on the applicability of the allocated maximum amount of uplink resources for uplink data transmissions on the individual HARQ processes. The at least one other base station schedules at least one other mobile terminal in communication with a respective base station based on the information received from the at least one scheduling base station. The claimed subject matter increases the

efficiency of soft handover by providing coordination among multiple base stations (see specification paragraph [0095]).

Regarding a detailed analysis of the teachings of Ranta-Aho et al. and Tiedemann et al. and their relevance to the claimed subject matter, the Applicants reiterate the comments in the response to the Office Action of March 10, 2009 filed June 10, 2009; and the response to the Office Action of July 27, 2009 filed October 27, 2009.

With respect to the new reliance on the Applicants' Description of the Related Art, it is submitted that a combination thereof with the teachings of Ranta-Aho et al. and Tiedemann et al. would not render claim 38 obvious to those skilled in the art.

In particular, it appears indeed unclear and not apparent how the teaching of Tiedemann et al. could be implemented in a technically meaningful manner in the system described in Ranta-Aho et al. The Office Actions have not made clear how the Office perceives such combination to be feasible. If this combination is reasserted in a subsequent Office Action, the Examiner are requested to supply such explanation in order to meet the requirements of the MPEP with respect to a clearly articulated rejection.

Moreover, with respect to using the Applicants' Description of the Related Art to show obviousness, the Applicants note that in paragraph [0057], cited by the Office Action, the signaling from a UE to the Node B is disclosed with respect to an indication of an HARQ process. However, to cure the deficiencies of Ranta-Aho et al. and Tiedemann et al., it would be necessary to teach "determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal from one base station to another base station."
(Emphasis added.)

However, the Applicants' Description of the Related Art does not disclose this subject matter of a transmission from one base station to another, and the mere disclosure to transmit HARQ process related information from a UE to a Node B is clearly insufficient to suggest the Applicants' claimed feature not shown by Ranta-Aho et al. and Tiedemann et al., i.e., "determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal from one base station to another base station" as recited in Applicants claim 38.

The Office Action acknowledges that Ranta-Aho does not disclose at least one scheduling base station transmitting information to at least one other base station of a plurality of base stations, and scheduling, by the at least one other base station, at least one other mobile terminal in communication with a respective base station, based on the information received from the at least one scheduling base station. Specifically, the Office Action states:

"However, RANTA-AHO does not expressly disclose transmitting from at least one scheduling base station information to at least one other base station of said plurality of base stations; and wherein the scheduling is based on the information received from the scheduling base station."

The Office Action relies on paragraphs [0031], [0042], [0093], and [0096] of Tiedemann as supplying the missing subject matter of at least one scheduling base station transmitting information to at least one other base station of a plurality of base stations, and scheduling, by the at least one other base station, at least one other mobile terminal in communication with a respective base station, based on the information received from the at least one scheduling base station. It is submitted that the cited portions of Tiedemann lack any of the subject matter alleged in the Office Action, as is apparent from each of these paragraphs, which have been

inserted below, along with paragraphs [0094] and [0095], for convenience and to make it easy to verify that they are devoid of relevant subject matter:

[0031] A backhaul interface 306 provides an interface to the backhaul 208 of the communication system 100. The backhaul interface 306 includes hardware and software for exchanging signals through the backhaul 208. The processor 304 transmits and receives information to and from controllers and other base stations 102-108 through the backhaul interface 306.

[0042] Although other methods may be used in some circumstances to forward the coupled load indicator 710 to the serving base station 704, the coupled load indicator 710 is transmitted through the backhaul 208 in the first exemplary embodiment. Accordingly, appropriate messaging and addressing is used to route the coupled load indicator 710 through the backhaul 208. The backhaul interface 306 performs any required translations, or processing to exchange the coupled load indicators through the backhaul. In some circumstances, the coupled load indicator 710 can be transmitted through a direct communication link between the non-serving base station 706 and the serving base station 704. For example, a radio frequency or microwave point-to-point system link can be used to transmit coupled load indicator 710 in some situations. Further, in some circumstances, the coupled load indicator 710 may be conveyed through the mobile station 702.

[0093] FIG. 15 is a block diagram of a portion 1500 of a communication system 100 providing communications services to mobile stations 110-114 with geographically distributed base stations 102-108 in accordance with the third exemplary embodiment of the invention. In most situations, the communication system 100 includes several base stations 1504, 1506 that are strategically positioned to provide wireless communication services to numerous mobile stations 1502. Depending on the quality of the communication channels between a mobile station 1502 and the base station (1504, 1506), the mobile station 1502 may be communicating with more than one base station (1504, 1506) at any particular time. As discussed above, each mobile station 1502 maintains a set of active base stations where the communication links between the mobile station 1502 and the active base stations 1504, 1506 are adequate for communication. Of the active base stations, one base station performs as the serving base station 1504 while the other base stations in the active set are non-serving base stations 1506. Such situations typically occur during a soft handoff where a single base station performs the functions of a serving base station 1504 and one or more other base stations are non-serving active base stations 1506. Where conditions warrant, the role of the serving base station 1504 is transferred to a base station previously functioning as a non-serving active base station 1506 (i.e., a handoff occurs).

[0094] In the interest of clarity, FIG. 15 includes blocks representing a mobile station 1502 and two active base stations 1504, 1506 including a serving base station 1504 and non-serving base station 1506. Those skilled in the art will recognize, based on these teachings and known techniques, that a base station 300 may function as a serving base station 1504 to numerous mobile stations 1502 and that any one mobile station 1502 may maintain any number of active base stations 1504, 1506. The teachings discussed herein, therefore, may be extended to any number of mobile stations 1502, serving base stations 1504, and non-serving base stations 1506. As discussed below in further detail, the other base stations 300 may not have a communication link with the mobile station 1502 of sufficient quality to become an active base station but may contribute to the load experienced at any one of the active base stations 1504, 1506. The serving base station 1504 may be the first base station 102, the second base station 104, or third base station 106 discussed above with reference to FIGS. 1-4. The serving base station 1504 may also function as a non-serving base station 1506 for another mobile station (not shown in FIG. 15) and the non-serving base station 1506 may function as a serving base station 1504 for other mobile stations (not shown in FIG. 15). Accordingly, a base station 102-108 may simultaneously function as a serving base station 1504 to some mobile stations 1502 and as a non-serving base station to other mobile stations. The functions described herein for each of the base stations 1504, 1506, therefore, are simultaneously performed by the other of the base stations in most circumstances.

[0095] In the third exemplary embodiment, a base station 300 functioning as a non-serving base station 1506 estimates an expected coupled load 1508 due to mobile stations 1502 served by other base stations 1504 and allocates reverse link resources in accordance with the expected coupled load 1508. Accordingly, no direct or explicit communication is sent over a backhaul 208 between the serving base station 1504 and the non-serving base station 1506 in the third exemplary embodiment of the invention. The serving base station 1504 schedules all mobile stations 1502 it is serving based on the channel quality of the traffic channel received at the serving base station 1504.

[0096] The non-serving base station 1506, schedules the mobile stations (not shown) served by the non-serving base station 1506 after making an estimate of the expected coupled load 1508 contributed by all the mobile stations 1502 it is not scheduling (i.e. serving) but that are transmitting reverse link signals 210 that are received and processed by the non-serving base station 1506. In some circumstances, the estimations of the expected coupled loads 1508 by the non-serving base stations 1506 are based on the measurements made of previous transmissions of mobile stations 1502 in a soft-handoff with the non-serving base station 1506. The estimation includes the total expected coupled loads from all mobile stations 1502 for which 1506 is a non-serving base station 1506 and that are served by any other base station." (Emphasis added.)

The Office Action acknowledges that Ranta-Aho and Tiedemann fail to expressly disclose

“determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal.”

The Office Action relies on the Applicants’ Description of the Related Art for a disclosure of this subject matter of determining and transmitting information indicative of individual HARQ processes to be used by a mobile terminal. However, it is submitted that this in no way cures the above-noted deficiencies of Ranta-Aho and Tiedemann are enumerated above. This is because the signaling from a UE to the Node B with respect to an indication of an HARQ process in no way teaches or suggests “determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal from one base station to another base station.” A teaching to transmit HARQ process related information from a UE to a Node B is clearly insufficient to suggest determining and transmitting information indicative of individual HARQ processes to be used by the mobile terminal from one base station to another base station, as recited in Applicants claim 38.

Accordingly, for at least the above reasons, even if the teachings of Ranta-Aho et al, Tiedemann et al. and Applicants’ Description of the Related Art were combined as proposed in the pending Office Action, the result still would lack the above-noted features of instant claim 38. Thus, it is submitted that the individual or combined teachings of these references fail to render obvious the subject matter of claim 38. Independent claim 61 similarly recites the above-mentioned subject matter distinguishing method claim 38 from the applied references, but with respect to an apparatus. Therefore, the rejections applied to claims 38 and 61 are considered to

be obviated, and allowance of claims 38 and 61 and all claims dependent therefrom is deemed to be warranted.

In view of the above, it is submitted that this application is in condition for allowance, and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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